CLAIMS

We claim:

1. A gantry-type vehicle washing system comprising: an inverted U-shaped frame member including a left leg with a left inside surface, a right leg with a right inside surface, and a top section spanning the left and right legs, the top section having a top inside surface; a vertically orientated lift actuator contained in one of said left and right legs; an elongated platform having a first end and a second end; the first end operatively attached to the lift actuator, the first end including a first connector and the second end including a second connector; and a flexible, non-extensible, elongated member having a first elongated member end and a second elongated member end, the second elongated member end attached to the second connector, the elongated member being slideably coupled with the top section of the frame permitting lengthwise movement, the first elongated member end being attached to the first connector, wherein the second end of the elongated platform is suspended from the elongated member.

2. The gantry-type vehicle washing system of claim 1, further comprising: one or more vertically orientated guide rails disposed in either the left or right legs; one or more guide members coupled to the elongated platform, each guide member in slidable engagement with the at least one of the one or more vertically orientated guide rails, wherein lateral movement of the elongated platform is minimized.

3. The gantry-type vehicle washing system of claim 1, wherein the lift actuator is pneumatic, and is in pneumatic communication with a compressor.

4. The gantry-type vehicle washing system of claim 3, further comprising: a pressurized air tank coupled with the pneumatic lift actuator by way of one or more air hoses, the one or more air hoses interceded by a pneumatic safety switch; wherein the pneumatic safety switch is configured to (i) prevent air flow between the air tank and the lift actuator through said one or more hoses when power is supplied to the compressor, and (ii) permit air flow through said one or more hoses when power to the compressor is interrupted, causing the lift actuator to raise the elongated platform.

5. The gantry-type vehicle washing system of claim 1, wherein the elongated platform further comprises: (i) a first bracket for attaching said first end of the elongated platform with the framework, (ii) a second bracket for attaching said second end of the elongated platform with the framework, (iii) a reciprocating pivotal actuator fixedly attached to the first bracket, the reciprocating pivotal actuator having a shaft, (iv) a boom having two boom ends and a longitudinal axis, the boom being pivotally attached to the first bracket at one boom end, and coupled with the shaft at the other boom end, whereby the boom can be pivoted about the longitudinal axis relative to the first and second brackets, and (v) one or more nozzles operatively coupled to the boom, each having a discharge opening capable of emitting a stream of fluid, whereby the pivotal movement of the boom changes the angular direction of the stream of fluid emitted from each nozzle.

6. The gantry-type vehicle washing system of claim 1, wherein the one or more nozzles are operatively coupled to the boom by way of one or more wand assemblies, each wand assembly comprising: an attachment member having a stationary section and a rotary section, the stationary section being fixedly attached to the boom; a rotating manifold rotateably coupled to the rotary section; one or more wands disposed on the rotating manifold; one or more nozzles attached to a distal end of each wand of the one or more wands; and a motor, the motor having a shaft, the shaft being coupled with the rotating manifold.

7. The gantry-type vehicle washing system of claim 1, further comprising: a first low pressure fluid delivery conduit substantially spanning the top section from the left leg to the right leg, the first low pressure fluid delivery conduit adjacent to the top inside surface; a first fluid delivery system in fluid communication with the first low pressure fluid delivery conduit for pumping a first fluid through the first low pressure fluid delivery conduit; and a first set of generally downward facing nozzles coupled in fluid communication with the first low pressure fluid delivery conduit.

8. A method of operating a gantry-type automobile wash, the method comprising: positioning the automobile wash gantry over a front section of a hood of an automobile, the

gantry including a inverted U-shaped framework, the inverted U-shaped framework having (1) a left leg with a left inside surface, (2) a right leg with a right inside surface, (3) a top section spanning the left and right legs and (4) an elongated overhead cleaning platform spanning the distance between the left and right inside surfaces, the elongated platform being vertically moveable and having a pivoting portion capable of clockwise and counterclockwise pivotal movement, the pivoting portion having a plurality of nozzles coupled therewith; lowering the platform until the nozzles are at a first predetermined distance from the surface of the hood; spraying jets of fluid substantially perpendicular to the surface of the hood from the plurality of nozzles while simultaneously moving the gantry toward the rear of the hood; as the gantry begins to pass over a windshield surface of the automobile, rotating the pivoting portion until the plurality of nozzles directly face the windshield surface; simultaneously spraying jets of fluid substantially perpendicular to the surface of the windshield from the plurality of nozzles while simultaneously moving the gantry towards the top rear of the windshield, and raising the platform to maintain a second predetermined distance between the nozzles and the windshield; as the gantry begins to pass over a roof surface of the automobile, rotating the pivoting portion until the plurality of nozzles directly face the roof surface; and spraying jets of fluid substantially perpendicular to the roof surface from the plurality of nozzles while simultaneously moving the gantry toward the rear of the roof.

9. The method of claim 8, wherein the plurality of nozzles are coupled to the platform by way of one or more pivoting wands.

10. The method of claim 8, further comprising: determining the profile of the automobile by utilizing sensors arranged on the inside surfaces of the left and right legs.

11. A vehicle washing system comprising: an inverted U-shaped frame member, the frame member including left and right legs and a top section connecting the left and right legs, the top section having an inside face; a first low pressure fluid delivery conduit substantially spanning the top section from the left leg to the right leg, the first low pressure fluid delivery conduit being adjacent to the inside face; a first fluid delivery system in fluid communication with the first low pressure fluid delivery conduit for pumping a first fluid through the first low

pressure fluid delivery conduit; a first set of generally downwardly facing nozzles coupled in fluid communication with the first low pressure fluid delivery conduit.

12. The vehicle washing system of claim 11, further comprising: a second low pressure delivery conduit substantially spanning the top section from the left leg to the right leg; a second fluid delivery system in fluid communication with the second low pressure fluid delivery conduit for pumping a second fluid through the second low pressure fluid delivery conduit; a second set of generally downwardly facing nozzles coupled in fluid communication with the second low pressure fluid delivery conduit.

13. The vehicle washing system of claim 12, wherein one or more nozzles of either the first or second set of generally downwardly facing nozzles are located proximate the intersection between the left leg and the top section or the right leg and the top section, and the one or more nozzles face slightly inwardly.

14. The vehicle washing system of claim 12, wherein the first fluid and the second fluid are different from each other.

15. The vehicle washing system of claim 14, wherein one fluid of the first and second fluids is a wax solution and the other fluid is a spot free rinse solution.

16. A method of washing a vehicle utilizing a gantry style vehicle wash system, a vehicle wash including (i) an application of a presoak solution to substantially cover the front, rear, side and top surfaces of a vehicle and (ii) a wash cycle to rinse substantially all of the front, rear, top and side surfaces with a high pressure cleaning solution, wherein the gantry is moveable from a forward position in front of a vehicle to a rear position that is behind the vehicle, the movement of the gantry over and around the vehicle from either a forward or rear position to the other position defining a pass, the method comprising washing a vehicle in three or fewer passes.

17. The method of claim 16, wherein a one pass of the application of a presoak solution, and another pass of the three or fewer passes comprises a high pressure wash cycle.

18. The method of claim 17, wherein a third pass of the three or fewer passes comprises a dwell cycle.

19. The method of claim 17, further comprising an additional pass after the three of fewer passes, wherein a clear coat or drying agent is applied to the vehicle.

20. The method of claim 17, further comprising an additional pass after the three of fewer passes, wherein a spot free rinse or a soft water rinse is applied to the vehicle.

21. The method of claim 17, further comprising an additional pass after the three of fewer passes, wherein both a clear coat and a spot free rinse are applied to the vehicle.

22. A vehicle wash system comprising: a framework; and one or more slow rotating turbo nozzles attached to the framework, each of the one or more slow rotating turbo nozzles configured for emitting a spiraling fluid jet having a rotational rate of less than approximately 1400 revolutions per minute (rpm).

23. The vehicle wash system of claim 22, wherein each of the one or more slow rotating turbo nozzles are configured for emitting a spiraling fluid jet having a rotational rate of less than approximately 1400 revolutions per minute (rpm).

24. The vehicle wash system of claim 22, wherein the framework further comprises an inverted u-shaped gantry, the gantry including right and left legs and a top span extending between the legs.

25. The vehicle wash system of claim 24, wherein the top span has one or more rotating or reciprocating members pivotally attached thereto, at least one of the one or more slow rotating turbo nozzles connected with the rotating or reciprocating members and in fluid communication with a supply of cleaning solution.

26. The vehicle wash system of claim 25, wherein the rotating or reciprocating members are wands.

27. The vehicle wash system of claim 25, wherein the top span includes a vertically movable platform, the movable platform having at least one of the one or more slow rotating turbo nozzles connected with thereto, the one or more slow rotating turbo nozzles being in fluid communication with a supply of cleaning solution.

28. The vehicle wash system of claim 25, wherein at least one of the plurality of slow rotating turbo nozzles is attached to either the left or right legs.

29. A vehicle wash system comprising: a framework; and one or more oscillating nozzles attached to the framework, each of the one or more oscillating nozzles configured for emitting a fluid jet having a generally linear path.

30. The vehicle wash system of claim 29, wherein the framework further comprises an inverted u-shaped gantry, the gantry including right and left legs and a top span extending between the legs.

31. The vehicle wash system of claim 30, wherein the top span has one or more rotating or reciprocating members pivotally attached thereto, at least one of the one or more oscillating nozzles connected with the rotating or reciprocating members and in fluid communication with a supply of cleaning solution.

32. The vehicle wash system of claim 30, wherein the top span includes a vertically movable platform, the movable platform having at least one of the one or more oscillating nozzles connected with thereto, the one or more oscillating nozzles being in fluid communication with a supply of cleaning solution.

33. The vehicle wash system of claim 30, wherein at least one of the plurality of oscillating nozzles is attached to either the left or right legs.

34. A high pressure nozzle for use in a vehicle wash system comprising: a nozzle body having a hollow interior; a connector attached to the nozzle body for fluidly coupling to a high pressure fluid source; one or more fluid passageways extending from the connector into the hollow interior, the one or more fluid passageways being configured to induce a fluid vortex with a rotational velocity not to exceed approximately 1400 revolutions per minute in the hollow interior when in operation; a nozzle member including a nozzle orifice, the nozzle member being substantially contained within the hollow interior for rotation substantially in unison with the fluid vortex during operation.

35. The nozzle of claim 34, wherein the one or more fluid passageways are configured to induce the fluid vortex with a rotational velocity not to exceed approximately 1400 revolutions per minute in the hollow interior when in operation.

36. A vehicle washing system comprising: a framework, the frame work including a vertical leg; and a plurality of high pressure nozzles in fluid communication with a source of cleaning solution vertically spaced in relation to each other along at least a portion of the vertical leg, the plurality of high pressure nozzles further including a first and second set of one or more nozzles, the first set being attached to the vertical leg generally below the second set; an automated control system for directing the operation of the vehicle washing system; and one or more automated valves for turning on and off the flow of cleaning solution to either or both the first and second set of valves responsive to a signal from the control system, wherein the first and second set of nozzles can be operated simultaneously or the first set of nozzles can be operated independent of the second set of nozzles.

37. The vehicle washing system of claim 36, wherein the first and second set of nozzles are fluidly connected in series with the cleaning solution source with the one or more automated valves comprising a single automated valve intervening between the fluid connection of the first and second sets.

38. The vehicle washing system of claim 36, wherein the one or more automated

valves are actuated by solenoids.

39. The vehicle washing system of claim 36, wherein the plurality of nozzles are slow rotating turbo nozzles.

40. The vehicle washing system of claim 36, wherein the plurality of nozzles are oscillating nozzles.

41. The vehicle washing system of claim 36, wherein the framework comprises an inverted u-shaped gantry having a left and right leg with a top span extending there between, and the vertical leg comprises either the left or right leg of the gantry.

42. A method of washing the sides of a vehicle using a gantry type vehicle washing system, the method comprising: moving a gantry along a path relatively parallel to a side of the vehicle; determining the relative positions of (i) a front end of the vehicle, (ii) a rear end of the vehicle, (iii) a portion of the vehicle extending higher than a preset distance above ground using a control system interfaced with a plurality of sensors; activating a first set of one or more high pressure nozzles to spray cleaning solution when the gantry moves between the front end and rear end of the vehicle during a wash cycle, the first set of nozzles being located on the gantry generally vertically positioned between the ground and the preset distance; activating a second set of one or more high pressure nozzles to spray cleaning solution when the gantry moves alongside the portion of the vehicle extending higher than the preset distance during the wash cycle, the second set of nozzles being located on the gantry generally vertically positioned above the preset distance; deactivating the second set of one or more high pressure nozzles when the gantry moves beyond the portion of the vehicle extending higher than the preset distance during the wash cycle; and deactivating both the first and second set of one or more high pressure nozzles when the gantry moves in front of the front end of the vehicle or behind the rear end of the vehicle.

43. The method of claim 42, wherein activating the first or second set of high pressure nozzles comprises permitting a flow of cleaning solution to into the first or second set of

high pressure nozzles.

44. The method of claim 43, wherein deactivating the first or second set of high pressure nozzles comprises preventing the flow of cleaning solution into the first or second set of high pressure nozzles.

45. The method of claim 43, wherein the flow of cleaning solution to either the first set or second set of high pressure nozzles is controlled by one or more solenoid valves.

46. The method of claim 42, wherein first set of nozzles primarily sprays fluid jets at the side surfaces of a vehicle positioned vertically below a hood or top surface of a trunk, and the second set of nozzles primarily sprays fluid jets at the side surfaces of a vehicle positioned vertically above the hood or the top surface of the trunk.

47. The method of claim 42, wherein said determining the relative positions of the vehicle occurs during a first pass of the gantry along the vehicle, and said activating and deactivating of the first and second set of nozzles occurs during a subsequent pass of the gantry along side the vehicle, a pass comprising movement of the gantry from either the front or rear end of the vehicle to the other of the front or rear end.

48. A washing system for a vehicle: a wash bay floor; a left front tire stop located on the wash bay floor, the left front tire stop having an inside edge and an outside edge; a right front tire stop located on the wash bay floor spaced from the left front tire stop, the right front tire stop having an inside edge and an outside edge, the right front tire stop inside edge facing and being generally parallel to the left front tire stop inside edge; a right and left outer guide member attached to the floor, each outer guide member having a section proximate and angled inwardly towards the outside edges of the respective front tire stop; an inner guide member attached to the floor, the inner guide member having (i) a left section angled outwardly generally towards the inside edge of the left tire stop, and (ii) a right section angled outwardly generally towards the inside edge of the right tire stop; and a framework, the framework having one or more nozzles

attached to the framework, each of the one or more nozzles configured for emitting a jet of cleaning solution.

49. A method of washing top surfaces of a vehicle using a gantry-type vehicle washing system, the method comprising:

moving a gantry relative to the vehicle along a path generally parallel to a longitudinal axis of the vehicle;

determining a height profile of the vehicle as the gantry is moved relative to the vehicle along the path;

vertically moving a platform coupled with the gantry based on the height profile as the gantry is moved relative to the vehicle along the path; and

spraying a cleaning solution onto the top surfaces of the vehicle from a plurality of turbo nozzles, the turbo nozzles being coupled with the platform.

50. The method of claim 49, wherein said determining a height profile further comprises repeatedly determining as the gantry moves along the path whether a height of a section of the vehicle over which the gantry is moving is lower than one or more preset vertical distances above the ground surface; and wherein said vertically moving a platform further comprises moving the platform to a preset position of two or more of preset positions above the ground surface based on a preset vertical distance of the one or more preset vertical distances that is higher than the height of the section.

51. A method of washing a top surface of a vehicle using a vehicle washing system, the method comprising:

determining a height profile of the vehicle; and

moving one or more turbo nozzles disposed above the vehicle vertically to maintain a distance between the one or more nozzles and the top surface within a predetermined range of distances.

52. The vehicle washing system of claim 36, wherein the plurality of nozzles are turbo nozzles.

53. The method of claim 42, wherein the one or more high pressure nozzles of the first set are turbo nozzles.

54. The method of claim 53, wherein the one or more high pressure nozzles of the second set are turbo nozzles.

55. A vehicle washing system comprising:

a framework;

a platform moveably coupled with the framework, the platform being capable of vertical movement relative to the framework;

one or more turbo nozzles in fluid communication with a source of cleaning fluid coupled to the platform, the turbo nozzles being in fluid communication with a source of cleaning solution;

a plurality of turbo nozzles in fluid communication with the source of cleaning fluid spaced vertically in relation to each other on the framework, the plurality of turbo nozzles being segmented into a first set and a second set, the turbo nozzles of the first set being attached to the framework generally vertically below the nozzles of the second set; and

one or more valves for controlling a flow of cleaning solution to the first and second sets, wherein cleaning solution flows to the first set and not the second set in a first mode of the one or more valves and cleaning solution flows to both the first and second sets in a second mode of the one or more valves.

56. The vehicle washing system of claim 55, further comprising:

a sensor located a preset vertical distance from a ground surface, the sensor being triggered when a section of a vehicle having a height greater than the preset vertical distance passes in front of the sensor; and

a control system operationally coupled with the sensor and the one or more valves;

wherein the control system configures the one or more valves into (i) the first mode when the sensor is triggered, and (ii) the second mode when the sensor is not triggered.